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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,891	03/09/2004	Robert D. Cronch	STL11760	5055

7590 04/22/2005

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EXAMINER	
MERCEDES, DISMERY E	

ART UNIT	PAPER NUMBER
2651	

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/797,891	CRONCH ET AL.	
	Examiner	Art Unit	
	Dismery E Mercedes	2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/9/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 3/9/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "74" and "174" have both been used to designate current profiles, page 8, lines 12 & 14 of the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "flex on suspension (FOS) conductors 128" on page 6, line 5 of instant specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing

sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "168" has been used to designate both "decay current" in Fig.5, and "demagnetization current generator" on page 8, line 8). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Takada et al. (US 6,038,093).

As to Claims 13, Takada discloses an apparatus, comprising: a sense circuit which senses a residual magnetization of a pole of a data transducer established by application of a data transmission current to transmit data (col.2, line 42-col.3, line 40 & col.5, lines 32-44); and a demagnetizing current generator coupled to the sense circuit which removes said residual

magnetization by supplying the transducer with a demagnetizing current selected in relation to the sensed residual magnetization (col.5, lines 45-50; col.6, lines 10-17; & col.10, lines 33-55).

As to Claim 14, Takada et al. further discloses a data transmission current generator which applies said data transmission currents to the transducer prior to operation of the sense circuit (col.16, lines 43-48 & col.14, lines 57-66 & as depicted in Fig.4, write current supplied to the head, after completion of recording operation, reading operations is performed thus sensing the residual magnetization).

As to Claim 15, Takada et al. further discloses wherein the sense circuit detects current induced by the residual magnetism in a conductor coupled to the pole (col.5, lines 35-36; col.10, lines 35-37 & as depicted in Figures 1 and 13).

As to Claim 16, Takada et al. further discloses the conductor is connected to a write coil of the transducer (as depicted in Figures 1 and 13).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al. in view of Gailbreath et al. (US 4,970,621).

As to Claim 17, Takada et al. discloses the apparatus of base claim 13, as stated in the 102(b) above. Takada et al., however, fails to particularly wherein the demagnetizing current generator

applies a bi-directional, time varying current of selected frequency to the transducer that tapers to a final magnitude. However, Gailbreath et al. discloses such (abstract, col.1 line 65-col.2, line 2 & col.2, line 57 – col.3, line 17 and as depicted in Figures 4 & 7).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of invention, to implement Gailbreath et al's technique the motivation being because it would provide Takada's apparatus with the enhanced capability of driving the magnetic transducer to a zero remanent state prior to the read cycle, thus eliminating the possibility of the occurrence of a spurious pulse during the data read back process.

As to Claim 18, Gailbreath et al. further discloses a frequency of the bi-directional, time varying current changes as said current tapers to the final magnitude (as depicted in Figures 4 and 7).

As to Claim 19, Gailbreath et al. further discloses wherein the magnitude of the bi-directional, time varying current tapers linearly, exponentially or in a step-wise fashion (as depicted in Figures 1 & 7).

As to claims 1-19, they are method claims corresponding to the apparatus claims 13-19, respectively and they are therefore rejected for the similar reasons as set forth in the rejection of claims 13-19 respectively, supra.

8. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al. in view of Ng. et al. (US 6,388,413 B1).

As to Claim 20, Takada et al. discloses the apparatus as claimed in base claim 13, supra, but fails to particularly disclose wherein the demagnetizing current generator applies a first demagnetizing current in accordance with a first profile prior to the sensing by the sense circuit, and

wherein the demagnetizing current subsequently applies a different, second demagnetizing current in accordance with a second profile in response to the sensed residual magnetization.

However, Ng. et al. discloses disk drive wherein different current profiles are selected by a microprocessor in response to a sequence of demands (col.8, line 51-col.9, line 16. Therefore, it would have been obvious to one of ordinary skill in the art to implement Ng. et al.'s technique in the apparatus disclosed by Takada et al., because it would provide the apparatus disclosed by Takada et al. with the enhanced capability of selecting, indicating the desired current through the actuator coil as a function of time during the seek.

As to claim 21, Ng. et al. further discloses wherein the second profile utilizes a different duration of elapsed time during which the second demagnetizing current is applied as compared to the first demagnetizing current (as depicted in Figures 3-5 & 7).

As to claims 8-10, they are method claims corresponding to the apparatus claims 20-21, respectively and they are therefore rejected for the similar reasons as set forth in the rejection of claims 20-21 respectively, supra.

9. Claim 22 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al. in view of Teo et al. (US 6,693,756 B2).

As to Claim 22, Takada et al. discloses the apparatus as claimed in base claim 13, but fails to particularly a preamplifier driver circuit configured for use in a data storage device to supply write currents to the transducer to write data to a recording medium and detect readback signals from the transducer obtain from data previously written to the recording medium.

However, Loh et al. discloses such (as depicted in Fig.3 & 7, col.2, lines 36-45; col.4, lines 20-25; col.8, lines 37-40). Therefore, it would have been obvious to one of ordinary skill in the art, at

the time of invention; to implement a preamplifier driver circuit as disclosed by Teo et al. in the apparatus disclosed by Takada et al., the motivation being because it would provide Takada's apparatus with the enhanced capability of reducing the read bias signal levels during writing operation, thus reducing the potential for damage due to the cross talk noise coupling of the write element with the read element.

10. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al. in view Loh et al., further in view of Dimitrov et al. (US 6,671,117 B2).

As to Claim 23, the combination of Takada et al. and Loh et al. discloses the apparatus as claimed in claim 22, but fail to particularly disclose the transducer is characterized as a perpendicular recording head which stores data to the recording medium along magnetic domains that are substantially aligned in a direction normal to a direction of movement of the recording medium with respect to the head.

However, Dimitrov et al. discloses such (as depicted in Fig.2, col. 1, lines 252-61 & col.2, line 61-col.3, line 15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement a perpendicular recording head as disclosed by Dimitrov et al. in the apparatus disclosed by Takada et al. and Loh et al., because it would provide an apparatus as disclosed by Takada and Loh et al., with the enhanced capability of erasing the effects of the magnetic distortions in the soft magnetic material underlayer, thus preventing damage to the SNR of the readback.

As to claims 11-12 are method claims corresponding to the claim 23 and it is therefore rejected for the similar reasons set forth of claim 23, supra.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Takada et al. (US 5,963,385); Fernsler et al. (US 4,742,270); Ogura et al. (US 4,670,799); Goh et al. (US 6,750,378 B2); Soga et al. (US 4,821,127); Dixon (US 6,351,340 B2); Bamba et al. (6,147,488).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dismery E Mercedes whose telephone number is 571-272-7558. The examiner can normally be reached on Monday - Friday, from 9:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dismery E Mercedes
Examiner
Art Unit 2651

DM 4/5/05

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